AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Withdrawn) A method of creating a fusion protein made up of (1) an antibody and (2) a peptide having a biological activity selected from the group consisting of immuno-stimulatory, membrane transport and homophilic activities wherein the peptide is connected to the antibody at a site that does not interfere with antigen binding of the antibody, the method comprising the steps of

creating a fusion gene comprising a nucleic acid sequence encoding an antibody and a nucleic acid sequence encoding the peptide, wherein the nucleic acid sequence encoding the peptide is located inside the nucleic acid sequence encoding the antibody at a site wherein, when the fusion is expressed, the fusion protein created thereby comprises the antibody and the peptide, wherein the peptide is connected to the antibody at a site that does not interfere with antigen binding of the antibody, and

expressing the fusion gene to create the fusion protein.

2. (Withdrawn) The method of Claim 1 wherein the antibody is an IgG heavy chain or light chain.

3. (Withdrawn) The method of Claim 1 wherein the antibody is an immunoglobulin fragment containing an antigen binding site.

4. (Withdrawn) A method of creating a fusion protein made up of (1) an antibody and (2) a peptide having a biological activity selected from the group consisting of immuno-stimulatory, membrane transport and homophilic activities wherein the peptide is connected to the antibody at a site that does not interfere with antigen binding of the antibody, the method comprising the steps of

providing a gene comprising a nucleic acid sequence encoding an antibody, wherein the gene is mutated to contain a restriction site, wherein the restriction site is located away from any section of the gene that encodes an antigen-binding site of the antibody,

creating a fusion gene by inserting a nucleic acid sequence encoding a peptide having a biological activity selected from the group consisting of immuno-stimulatory, membrane transport and homophilic activities into the restriction site of the gene comprising the nucleic acid sequence encoding the antibody, and wherein the nucleic acid sequence encoding the peptide is inserted so that it is in-frame with the nucleic acid sequence encoding the antibody or antibody fragment, and

expressing the fusion gene to create a fusion protein.

5. (Withdrawn) The method of Claim 4 wherein the antibody is a heavy or light chain of human IgG, IgA or IgM.

6. (Withdrawn) The method of Claim 4 wherein the antibody is a heavy chain of human IgG and the restriction site is located at the 3' end of the CH1 exon.

7. (Withdrawn) The method of Claim 6 wherein the restriction site is created by locating a sequence of ttggtg at the 3'end of the CH1 exon and replacing the sequence of ttggtg with a sequence of tacgta, thereby creating an SnaB I restriction site.

8. (Withdrawn) The method of Claim 4 wherein the antibody is a heavy chain of human IgG and the restriction site is located after the hinge at the 5' end of the CH2 exon.

9. (Withdrawn) The method of Claim 8 wherein the restriction site is created by locating a sequence of cacctg immediately after the hinge at the 5' end of the CH2 exon and replacing the sequence of cacctg with a sequence of cagctg, thereby creating an Pvu II restriction site.

10. (Withdrawn) The method of Claim 4 wherein the antibody is a heavy chain of human IgG3 and the restriction site is located at the 3' end of the CH3 exon.

11. (Withdrawn) The method of Claim 10 wherein the restriction site is created by locating a sequence of aatgag at the 3' end of the CH3 exon and

replacing the sequence of aatgag with a sequence of aataat, thereby creating an Ssp I restriction site.

12. (Withdrawn) The method of claim 1, wherein said peptide is derived from a human or non-human C3d region homologous to the human C3d residues at position 1217-1232 and ranges from about 10 to about 16 mer.

13. (Withdrawn) The method of claim 1, wherein said peptide is a 16mer peptide derived from a human or non-human C3d region homologous to the human C3d residues at position 1217-1232.

14. (Withdrawn) The method of claim 1, wherein said antibody is specific for a cellular receptor, or a membrane structure on a normal cell or on tumor cells.

15. (Withdrawn) The method of claim 1, wherein said peptide is selected from the group consisting of hormones, ligands for cytokines and binding sites derived from natural ligands for cellular receptors.

16. (Withdrawn) The method of claim 1, wherein said peptide has inverse hydropathic character and said peptide exhibits mutual affinity and homophilic binding, within the length of said peptide.

17. (Withdrawn) A method Claim 1 wherein the antibody is a heavy or light chain immunoglobulin molecule and wherein the nucleic acid sequence encoding the peptide is located inside the nucleic acid sequence encoding the antibody at a site so that when the fusion gene is expressed, the peptide is attached directly to the C-terminal or the N-terminal of the heavy or light chain.

18. (Withdrawn) A fusion gene for expressing a fusion protein made up of (1) an antibody and (2) a peptide having a biological activity selected from the group consisting of immuno-stimulatory, membrane transport and homophilic activities wherein the peptide is connected to the antibody at a site that does not interfere with antigen binding of the antibody, the fusion gene comprising

a nucleic acid sequence encoding an antibody and

a nucleic acid sequence encoding a peptide having a biological activity selected from the group consisting of immuno-stimulatory, membrane transport and homophilic activities,

wherein the nucleic acid sequence encoding the peptide is located inside the nucleic acid sequence encoding the antibody at a site wherein, when the fusion is expressed, the fusion protein created thereby comprises the antibody and the peptide, wherein the peptide is connected to the antibody at a site that does not interfere with antigen binding of the antibody.

19. (Withdrawn) A fusion gene for expressing a fusion protein made up of (1) an antibody and (2) a peptide having a biological activity selected from the group consisting of immuno-stimulatory, membrane transport and homophilic activities

wherein the peptide is connected to the antibody at a site that does not interfere with antigen binding of the antibody, wherein the fusion gene is made by a process comprising the steps of

providing a gene comprising a nucleic acid sequence encoding an antibody, the gene being mutated to contain a restriction site, wherein the restriction site is located away from any section of the gene that encodes an antigen-binding site of the antibody,

inserting a nucleic acid sequence encoding a peptide having a biological activity selected from the group consisting of immuno-stimulatory, membrane transport and homophilic activities into the restriction site of the gene, and wherein the nucleic acid sequence encoding the peptide is inserted so that it is in-frame with the nucleic acid sequence encoding the antibody or antibody fragment.

20. (Withdrawn) The fusion gene of Claim 18 wherein the antibody encoded by the gene is a heavy or light chain immunoglobulin molecule and wherein the nucleic acid sequence encoding the peptide is located inside the nucleic acid sequence encoding the antibody at a site so that when the fusion gene is expressed, the peptide is attached directly to the C-terminal or the N-terminal of the heavy or light chain.

21. (Currently Amended) An antigen-binding fusion protein comprising (1) an antibody and (2) a peptide of SEQ ID NO: 1 having homophilic activity,

wherein the antibody is specific for cellular receptor and the peptide is a specific binding site derived from a natural ligand for a specific cellular receptor;

wherein the antibody is a murine anti-idiotype antibody 3H1 and the peptide is a complement fragment C3d; and

wherein the peptide does not interfere with antigen binding.

22. (Previously Presented) The antigen-binding fusion protein of Claim 21 wherein the antibody comprises a light chain or heavy chain immunoglobulin molecule and wherein the peptide is attached to the C-terminal or the N-terminal end of said light chain or heavy chain immunoglobulin molecule.

23. (Currently Amended) An antigen-binding fusion protein comprising (1) an antibody and (2) a peptide of SEQ ID NO: 1 having homophilic activity~~,~~; wherein the antibody is specific for cellular receptor and the peptide is a specific binding site derived from a natural ligand for a specific cellular receptor; wherein the antibody is a murine anti-idiotype antibody 3H1 and the peptide is a complement fragment C3d; wherein said peptide does not interfere with antigen binding~~,~~; and wherein the fusion protein is created by a process comprising the steps of:

creating a nucleic acid fusion product comprising a nucleic acid sequence encoding an antibody and a nucleic acid sequence encoding said peptide, such that the nucleic acid sequence encoding the peptide is located internally to the nucleic acid sequence encoding the antibody, and such that the peptide is connected to the antibody at a site that does not interfere with antigen binding, and

expressing the nucleic acid fusion product to create the fusion protein.

24. (Previously Presented) The antigen-binding fusion protein of claim 21, wherein said antibody is specific for a cellular receptor on a normal cell or on a tumor cell.

25. (Previously Presented) The antigen-binding fusion protein of claim 21, wherein said antibody is a full-length immunoglobulin molecule or a variable domain containing fragment of an antibody.

26. (Previous Presented) The antigen-binding fusion protein of Claim 21 wherein said peptide has inverse hydropathicity within the length of said peptide.

27. (Previously Presented) The antigen-binding fusion protein of Claim 21, wherein said antibody comprises a light chain or heavy chain immunoglobulin molecule and wherein said peptide is localized internally to said light chain or heavy chain immunoglobulin molecule.

28. (Currently Amended) An antigen-binding fusion protein comprising (1) an antibody and (2) a peptide of SEQ ID NO: 1 having immuno-stimulatory activity~~,~~; wherein the antibody is specific for cellular receptor and the peptide is a specific binding site derived from a natural ligand for a specific cellular receptor; wherein the antibody is a murine anti-idiotype antibody 3H1 and the peptide is a complement

fragment C3d; wherein said peptide does not interfere with antigen binding~~.~~; and wherein said antibody comprises a light chain or heavy chain immunoglobulin molecule and wherein said peptide is attached to the C-terminal or the N-terminal of said light chain or heavy chain immunoglobulin molecule.

29. (Previously Presented) The antigen-binding fusion protein of Claim 28, wherein said peptide is derived from a human or non-human C3d region homologous to the human C3d residues at position 1217-1232 and ranges from about 10 to about 16 mer.

30. (Previously Presented) The antigen-binding fusion protein of Claim 28, wherein said antibody comprises a light chain or heavy chain immunoglobulin molecule and wherein said peptide is localized internally to said light chain or heavy chain immunoglobulin molecule.

31. (Previously Presented) The antigen-binding fusion protein of claim 28, wherein said antibody is specific for a cellular receptor on a normal cell or on a tumor cell.

32. (Currently Amended) An antigen-binding fusion protein comprising (1) an antibody and (2) a peptide of SEQ ID NO: 1 having membrane transport activity~~.~~; wherein the antibody is specific for cellular receptor and the peptide is a specific binding site derived from a natural ligand for a specific cellular receptor; wherein the

antibody is a murine anti-idiotype antibody 3H1 and the peptide is a complement fragment C3d; and wherein said peptide does not interfere with antigen binding.

33. (Previously Presented) The antigen-binding fusion protein of Claim 32, wherein said antibody comprises a light chain or heavy chain immunoglobulin molecule and wherein said peptide is attached to the C-terminal or the N-terminal of said light chain or heavy chain immunoglobulin molecule.

34. (Previously Presented) The antigen-binding fusion protein of Claim 32, wherein said antibody comprises a light chain or heavy chain immunoglobulin molecule and wherein said peptide is localized internally to said light chain or heavy molecule.

35. (Previously Presented) The antigen-binding fusion protein of claim 32, wherein said antibody is specific for a cellular receptor on a normal cell or on a tumor cell.

36. (Previously Presented) The antigen-binding fusion protein of Claim 21, wherein said peptide is derived from a human or non-human C3d region homologous to the human C3d residues at position 1217-1232 and ranges from about 10 to about 16 mer.

37. (Previously Presented) The antigen-binding fusion protein of Claim 22, wherein said peptide is a 16mer peptide derived from a human or non-human C3d region homologous to the human C3d residues at position 1217-1232.

38. (Previously Presented) The antigen-binding fusion protein of Claim 29, wherein said peptide is a 16mer peptide derived from a human or non-human C3d region homologous to the human C3d residues at position 1217-1232.

39. (Previously Presented) The antigen-binding fusion protein of Claim 32, wherein said peptide is derived from a human or non-human C3d region homologous to the human C3d residues at position 1217-1232 and ranges from about 10 to about 16 mer.

40. (Previously Presented) The antigen-binding fusion protein of Claim 33, wherein said peptide is a 16mer peptide derived from a human or non-human C3d region homologous to the human C3d residues at position 1217-1232.